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## NOTICE OF ALLOWANCE AND FEE(S) DUE

22913 7590 06/11/2009

Workman Nydegger  
1000 Eagle Gate Tower  
60 East South Temple  
Salt Lake City, UT 84111

EXAMINER

CHEN, QING

ART UNIT

PAPER NUMBER

2191

DATE MAILED: 06/11/2009

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/711,322

09/10/2004

Arash Massoudi

16906.4.1

5321

TITLE OF INVENTION: SEMANTIC-BASED TRANSACTIONAL SUPPORT AND RECOVERY FOR NESTED COMPOSITE SOFTWARE SERVICES

| APPLN. TYPE    | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO           | \$1510        | \$0                 | \$0                  | \$1510           | 09/11/2009 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE  
Commissioner for Patents  
P.O. Box 1450  
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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22913 7590 06/11/2009

Workman Nydegger  
1000 Eagle Gate Tower  
60 East South Temple  
Salt Lake City, UT 84111

**Note:** A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

|                    |
|--------------------|
| (Depositor's name) |
| (Signature)        |
| (Date)             |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/711,322 09/10/2004 Arash Massoudi 16906.4.1 5321

**TITLE OF INVENTION:** SEMANTIC-BASED TRANSACTIONAL SUPPORT AND RECOVERY FOR NESTED COMPOSITE SOFTWARE SERVICES

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| nonprovisional | NO           | \$1510        | \$0                 | \$0                  | \$1510           | 09/11/2009 |

| EXAMINER   | ART UNIT | CLASS-SUBCLASS |
|------------|----------|----------------|
| CHEN, QING | 2191     | 717-121000     |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

**PLEASE NOTE:** Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

**NOTE:** The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_

Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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|---|-------------|----------------------|-------------------------|------------------|
| 10/711,322  | 09/10/2004  | Arash Massoudi       | 16906.4.1               | 5321             |
| 22913   | 7590        | 06/11/2009           | EXAMINER                |                  |
| Workman Nydegger<br>1000 Eagle Gate Tower<br>60 East South Temple<br>Salt Lake City, UT 84111 |             |                      | CHEN, QING              |                  |
|   |             |                      | ART UNIT                | PAPER NUMBER     |
|   |             |                      | 2191                    |                  |
|   |             |                      | DATE MAILED: 06/11/2009 |                  |

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 960 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 960 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability**

Application No.

10/711,322

Examiner

Qing Chen

Applicant(s)

MASSOUDI, ARASH

Art Unit

2191

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the election filed on February 26, 2009.
2. ☒ The allowed claim(s) is/are 20-28, renumbered as 1-9.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).  
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application                      |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date <u>20081121, 20090420</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material                             | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|  | 9. <input type="checkbox"/> Other _____.   |

**DETAILED ACTION**

1. This Office action is in response to the election filed on February 26, 2009.
2. **Claims 20-28** are pending.
3. **Claims 20-28** are elected.
4. **Claims 20-26 and 28** have been amended.
5. **Claims 1-19 and 29** have been canceled.
6. **Claims 20-28** are allowed, renumbered as 1-9.
7. The objections to the specification are withdrawn in view of Applicant's amendments to the specification.
8. The objections to Claims 8 and 10-14 are withdrawn in view of Applicant's cancellation of the claims.
9. The 35 U.S.C. § 112, first paragraph, rejections of Claims 1-15 are withdrawn in view of Applicant's cancellation of the claims.
10. The 35 U.S.C. § 112, second paragraph, rejections of Claims 1-15 are withdrawn in view of Applicant's cancellation of the claims.
11. The 35 U.S.C. § 101 rejections of Claims 1-15 are withdrawn in view of Applicant's cancellation of the claims.

***Terminal Disclaimer***

12. The terminal disclaimer filed on May 6, 2009 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Patent

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Number 7,533,387 has been reviewed and is accepted. The terminal disclaimer has been recorded.

***Election/Restrictions***

13. This application is in condition for allowance except for the presence of Claims 16-19 and 29 directed to inventions non-elected without traverse. Accordingly, Claims 16-19 and 29 have been canceled.

***Examiner's Amendment***

14. An Examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this Examiner's amendment was given in a telephone interview with Sara D. Jones (Reg. No. 47,691) on May 6, 2009.

The application has been amended as follows:

**AMENDMENTS TO THE CLAIMS**

Please cancel Claims 16-19 and 29 and amend Claims 20-26 and 28 as follows:

16-19. (Canceled)

20. (Currently Amended) In a computing system having one or more computers configured to invoke one or more composite software services, each composite software service containing one or more embedded software services, a method of creating a context for a composite software service, the method comprising:

identifying a composite software service containing one or more embedded software services;

receiving a request to invoke the composite software service;

tracking in an execution graph connectivity and data dependencies among the one or more embedded software services contained within the composite software service including tracking any context-sensitive attributes for the one or more embedded software services, the context-sensitive attributes declaring whether an embedded software service is transactional and recovery behavior of the embedded software service upon a termination event, wherein the recovery behavior is at least one of compensate, rollback or commit;

tracking in an invocation map, based on the execution graph, a context of the composite software service, the context including states of execution of the one or more embedded software services;

associating a unique ID ~~for~~ with the invocation of each of the one or more embedded software services for the purpose of recovery from an unknown state;

invoking one of the one or more embedded software services;

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when receiving an indication that invocation of one of the one or more embedded software services ~~has succeeded~~ was successful, updating a state of the successful embedded software service in the invocation map; and

when receiving an indication that invocation of one of the one or more embedded software services was unsuccessful, using the unique ID associated with the unsuccessful embedded software service to re-invoke the unsuccessful embedded software service.

21. (Currently Amended) The method of claim 20, wherein the invocation map is further configured to store an object holding a context of a shared memory such that changes to the shared memory based on the context-sensitive attributes are reflected.

22. (Currently Amended) The method of claim 20, wherein when receiving an indication that invocation of one of the one or more embedded software services ~~has succeeded~~ was successful comprises determining whether all of the one or more embedded software services of the composite software service are consumed successfully including a successful routing of any services that failed.

23. (Currently Amended) The method of claim 22, wherein when receiving an indication that invocation of all of the one or more embedded software services ~~has succeeded~~ was successful further comprises:

determining whether the composite software service is a root service such that it is contained within another composite software service;



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if the composite software service is a root service, committing together all of the one or more embedded software services; and

if the composite software service is not a root service, waiting until the composite software service receives a commit or rollback call from a context of the another composite software service.

24. (Currently Amended) The method of claim 20, wherein when receiving an indication that invocation of one of the one or more embedded software services was unsuccessful comprises determining whether any of the one or more embedded software services of the composite software service are consumed unsuccessfully without having a predefined routing upon failure.

25. (Currently Amended) The method of claim 24, wherein when receiving an indication that invocation of one of the one or more embedded software services was unsuccessful, rolling back a context of ~~the~~ an instance of the composite software service.

26. (Currently Amended) The method of claim 20, wherein the invocation map further stores modifications to shared data structures accessed in a definition of the composite software service as an object holding a context of ~~the~~ a shared memory and updating the invocation map to reflect changes or discarding changes done to the shared memory based on a context of ~~the~~ a composite software service instance.

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28. (Currently Amended) The method of claim 27, further comprising:  
obtaining a context of the service library;  
preparing a software service associated to the ~~implementing~~ service library within the  
~~unique context obtained from the~~ service library context; and  
performing a recovery behavior on the service library context upon a termination event.

29. (Canceled)

-- END OF AMENDMENT --

***Reasons for Allowance***

15. The following is an Examiner's statement of reasons for allowance:

The cited prior art taken alone or in combination fail to teach, in combination with the other claimed limitations, "tracking in an execution graph connectivity and data dependencies among the one or more embedded software services contained within the composite software service including tracking any context-sensitive attributes for the one or more embedded software services, the context-sensitive attributes declaring whether an embedded software service is transactional and recovery behavior of the embedded software service upon a termination event, wherein the recovery behavior is at least one of compensate, rollback or commit; tracking in an invocation map, based on the execution graph, a context of the composite software service, the context including states of execution of the one or more embedded software services; associating a unique ID with the invocation of each of the one or more embedded

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software services for the purpose of recovery from an unknown state” as recited in independent Claim 20.

The closest cited prior art, the combination of US 2003/0233602 (hereinafter “Lindquist”) and US 2002/0194244 (hereinafter “Raventos”), teaches binding Web services through the operation of a grid mechanism. However, the combination of Lindquist and Raventos fails to teach “tracking in an execution graph connectivity and data dependencies among the one or more embedded software services contained within the composite software service including tracking any context-sensitive attributes for the one or more embedded software services, the context-sensitive attributes declaring whether an embedded software service is transactional and recovery behavior of the embedded software service upon a termination event, wherein the recovery behavior is at least one of compensate, rollback or commit; tracking in an invocation map, based on the execution graph, a context of the composite software service, the context including states of execution of the one or more embedded software services; associating a unique ID with the invocation of each of the one or more embedded software services for the purpose of recovery from an unknown state” as recited in independent Claim 20.

Any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

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***Conclusion***

16. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

17. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Qing Chen whose telephone number is 571-270-1071. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 4:00 PM. The Examiner can also be reached on alternate Fridays.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wei Zhen, can be reached on 571-272-3708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Q. C./

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Examiner, Art Unit 2191

/Wei Y Zhen/

Supervisory Patent Examiner, Art Unit 2191